



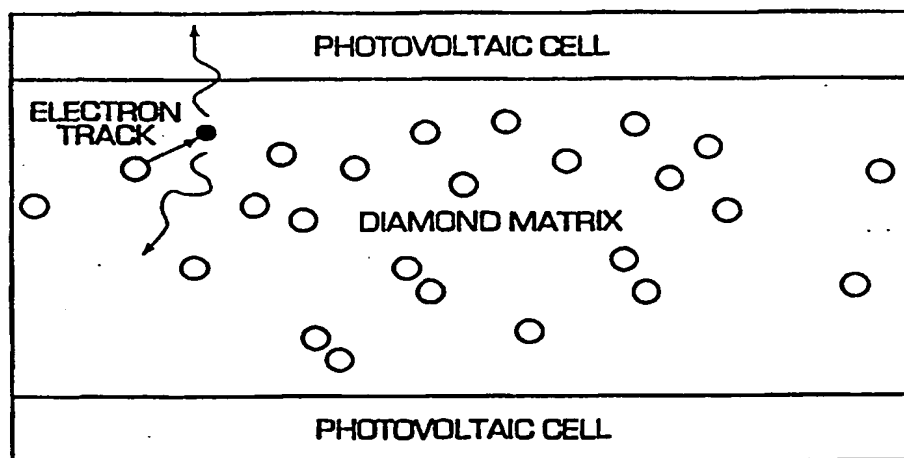
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(54) Title: SOLID STATE ELECTRIC GENERATOR USING RADIONUCLIDE-INDUCED EXCITON PRODUCTION

## (57) Abstract

A heat and electrical energy conversion device using diamond or other single or polycrystalline substances as a storage medium. A radioactive isotope is impregnated into the diamond crystalline structure so that the interstitial voids between the carbon atoms of the diamond structure are each occupied by an atom of the radioactive isotope. However, other wide band-gap materials, such as the typical wide band-gap direct transition materials that include silicon carbide (SiC), gallium nitride (GaN), and aluminium nitride (AlN), also can be used, depending on the desired photoluminescence wavelengths. The crystal lattices produce electromagnetic radiation in response to charged particle irradiation, e.g., the EXCITON mechanism or emission due to color centers, defects or vacancies effect to provide a conversion of the emitted particles to photons, which subsequently are converted to electrical energy with photovoltaic devices. The devices can be assembled in to cells and the cells wired into modules.



○ TRITIUM ATOMS

● BETA PARTICLE

PHOTONS